

CONTRIBUTIONS TO A KNOWLEDGE OF THE HYMENOPTERA OF BRAZIL.
No. 1, SCOLIIDÆ.

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The explorations of Herbert H. Smith have done more to extend our knowledge of the insect fauna of Tropical America than those of any other person, with the possible exception of the late Henry Walter Bates. His work in Mexico for the *Biologia Centrali Americana* and for the West India Committee has given him an extended reputation; but it remains for the classifying of his South American collections to show the real extent of his labors in the field and forest.

It has been my good fortune to have Mr. Smith's collection of fossorial hymenoptera placed in my hands for identification and study, and its size is indicated by the number of species contained in the present paper on the Scoliidæ, which includes no less than thirty species, besides some half dozen species of the genus *Tiphia*, which, in consequence of many faulty descriptions of South American forms, I have been obliged to leave undetermined.

In 1873-1875, Mr. Smith worked alone on the Amazons, and the Santarem material was then gathered. In 1881-1886, accompanied by his wife and two assistants, another journey was made. Going first to Pará he and his wife made a flying trip to Santarem, and then down the coast, stopping a week at Pernambuco and several months at Rio de Janeiro; from the latter place they went to Entre Rios. Six months were spent in Rio Grande do Sul; but there are no hymenoptera in the collection from that place. By steamer they proceeded up the Paraguay to Corumbá and Cuyabá. Headquarters were established at Chapada, and there four years were spent. Ad interim Mr. Smith returned to Rio de Janeiro for a year, leaving his wife and one assistant in the interior. After finally leaving Chapada they made a canoe journey on the Upper Paraguay to Pedra de Amolas, Pacoval, etc., but most of the time was here given to geological and ethnological work. Subsequently several weeks were spent at Corumbá and Piedra Blanca, before returning to the United States.

Mr. Smith has kindly furnished me with the following notes on localities visited as far as they relate to the hymenoptera.

Santarem. A town at the junction of the Tabajós with the Amazon. Its immediate vicinity is more or less open land, with scattered low trees and a thin grass growth: the type of vegetation called campo in Brazil. Most of the hymenoptera labeled Santarem, were, however, collected a few miles inland or down the Amazon, at the settlements of Panema, Marurú and Taperinha, where most of the land is covered with heavy forest broken by a few clearings. The soil both of campo and forest is sandy. The climate is moderately warm for a region so near the equator, and moist, though not extremely so.

Monte Alegre is in campo land very similar to Santarem; it is on the opposite or northern side of the Amazon.

Specimens marked Pernambuco are from the San Francisco plantation, some miles inland: a clearing in forest; land hilly, and soil clay.

Rio de Janeiro. Land originally forest. No specimens were collected above 2,500 ft. alt.

Entre Rios, in the State of Rio de Janeiro, is on the Parabyba do Sul River, back of the Organ Mountains. The soil is clay, covered with low and somewhat open forest; climate rather dry. Mr. Smith says: "The insects of Entre Rios, I have found, resemble those of Chapada and Corumbá rather than those of Rio."

Corumbá, in the State of Matto Grosso, on the western bank of the Paraguay, close to the confines of Bolivia. The climate dry and hot; the vegetation open; dry forest, full of cacti and other thorny plants. The opposite side of the Paraguay, where some collections were made (these are marked "lowland") is in the great flood-plain: a vast semi-swampy region, flooded every year during several months. This is the region known to geographers as Lake Xaraes, or, better, the Xaraes Marshes (also written Charaes or Jaraes).

Piedra Blanca (or *Pedra Branca*), a small settlement and custom-house just within the boundary of Bolivia, on a lake opening into the Paraguay, and only four miles from Corumbá. The land is low and damp and covered with heavy forest, very different from the region about Corumbá.

Pacoval and *Pedra de Amolas* are settlements on the Paraguay above Corumbá, on the edge of the flood-plain, but backed by rocky hills; land open or forest.

Cuyabá is the capital of Matto Grosso, on the River Cuyabá, a sub-branch of the Paraguay; soil dry and stony, with campo growth; climate dry and hot.

Cachoeira is just above Cuyabá, on low, semi-swampy land.

Chapada. Here the greater part of the collection was made. It is an Indian village, thirty miles northeast of Cuyabá, on the plateau stretching from the southern tributaries of the Amazon to the flood-plains of the Paraguay, and is about 2,700 ft. above sea level. The land in the immediate vicinity of the village is clayey or stony. Many of the specimens marked from here are from the neighboring settlements of Abrilonga, Gloria, etc., several hundred feet lower, and on sandy soil. All this region has a varied vegetation: stretches of open land or campo and semi-forest are interspersed with large patches of heavy forest. The climate is never very warm (mean at Chapada 72° F.) and there are cold snaps in June, July and August, when the thermometer frequently sinks to 40° or lower. These cold snaps are caused by southerly winds, which, as Mr. Smith states, he has proved are the same as the "pamperos," which are so destructive to shipping on the Rio de la Plata. The latitude of Chapada is about 14° 8'. The hymenoptera from this place were largely collected on flowers about the open lands, and near the streams, where many specimens were gathered in muddy places.

To quote from a letter of June 16, 1896, from Mr. Smith: "I cannot say that the collection of fossorial hymenoptera is a particularly good one. The best work was done at Chapada; but even there most of our time was given to other branches, and I was much interrupted. In my opinion, the hymenoptera of Brazil are hardly touched. The rule in the tropics, with all orders of insects, is that a few species are common, while a great majority are rare, and require a long and patient collecting to amass a reasonably good representation. Probably the Scoliidae are as well represented as any, because most of the species are large and conspicuous. They have a very peculiar and almost indescribable odor. I found them most common on flowers."

The Scoliidae are as follows:

Myzine flavopicta Sm.

Rio de Janeiro (November); Corumbá (February and April); Chapada (March and November). Four female and seven male specimens. Burmeister's *M. duplicata* is a variety of this species.

Myzine emarginata n. sp.

♀.—Black; basal two-thirds of mandibles; tibiæ, tarsi and apex of femora reddish; a transverse, medially enlarged line across front, a narrower one across occiput; line on pronotum posteriorly and a spot on each side anteriorly, spot on dorsulum medially, small one near tegulæ, line on scutellum and metanotum, tegulæ at base, triangular spot on mesopleuræ, a large one on each postero-lateral angle of middle segment, and a small elongate one above in the middle, rarely absent, spot on fore femora beneath near apex, spot on medial and hind femora above near apex, this spot sometimes extending on the lower surface, fore tibiæ externally, broad transverse band on first dorsal segment, sometimes emarginate anteriorly in the middle, the second entirely except a narrow line at base and a transverse medial line, these lines united so as to form a low X, the medial one not extending to the sides, and apex of second, third and fifth with a narrow, thrice emarginate line at apex, yellow, that on the fifth irregular; body sparsely clothed with griseous pubescence; front with large separated punctures, smooth medially, those of the vertex and occiput very sparse; clypeus rather sharply carinated down the middle; pronotum and dorsulum much more sparsely, with large punctures, those of the scutellum and mesopleuræ closer; middle segment above finely punctured, in the middle somewhat roughened posterior face above and at the sides with coarse transverse wrinkles, at apex the wrinkles are longitudinal, sides very finely and obliquely striated; first dorsal segment punctured at the sides, the second with fine sparse punctures, strong at sides, punctures of segments 3 and 4 fine and closer, of the fifth stronger, second ventral with large sparse punctures, the remaining ventrals finely punctured at base, coarsely at apex; pygidial area covered with strong, longitudinally parallel striæ, the apex narrowly reddish; wings light fusco hyaline, with a broad fuscous streak running from stigma to apex of superiors. Length 16–17 mm.

Chapada (March to May). A series of males collected at Chapada and Corumbá (April), I place here with some doubt.

♂.—Black; abdomen iridescent; clypeus, mandibles except apex, inner orbits, spot on scape beneath, one over each antennæ, line on anterior and posterior margin of pronotum, that on anterior margin interrupted medially, dorsulum medially, spot on scutellum and metanotum, large spot on mesopleuræ anteriorly and a small one posteriorly, two parallel spots on upper surface of middle segment,

postero-lateral angles of the latter, spot on all the coxæ beneath, and above on the posterior pairs, femora except base, remainder of legs except stripe on tibiæ beneath and a ring at apex of tarsal joints, a thrice emarginate fascia at apex of dorsals 1-6, the first broadest, the last interrupted medially, and a elongate spot on each side of ventrals 2-5, all yellow; wings hyaline, faintly dusky at apex, stigma testaceous; antennæ but little longer than the combined length of head and thorax; front rather strongly and closely punctured, the occiput much more finely so; middle segment above in the middle strongly punctured, the posterior face closely and transversely striato-punctate, on the sides, obliquely and more finely so; abdomen above with rather strong, separated punctures, beneath the punctures a little finer and sparser. Length 15-17.

This sex is very like the ♂ of *flavopicta*, but is, as a rule, larger; spots on postero-lateral angles of the middle segment larger, abdominal fasciæ thrice emarginate, and the sculpture of the middle segment is less coarse. The spotted upper surface of middle segment is constant in all but two of the twenty-two specimens before me.

Myzine frontalis Burm.

One specimen. Corumbá (April).

Myzine radiata n. sp.

♀.—Black; abdomen iridescent; spot on each side of clypeus, at base of each antenna, inner orbits, two dots on metanotum, and a small spot on each side of the first dorsal segment, yellow; tibiæ, tarsi, mandibles and tegulæ in part obscurely rufo-testaceous; clypeus with fairly strong punctures on each side, in the middle longitudinally raised or carinated and impunctate; front and occiput with large separated punctures, which are finer along the occipital margin; region including the ocelli almost impunctate; scape distinctly punctured; pronotum and dorsulum with strong, though not very deep punctures, the posterior portion of dorsulum, however, and the scutellum are longitudinally rugoso-punctate; sides of prothorax strongly and obliquely striated; mesopleuræ with the punctures deeper and more even than on pronotum; upper surface of middle segment at base microscopically punctured, transversely strigose posteriorly, posterior face with unusually coarse wrinkles or folds radiating rather evenly from apex and covering the entire surface, and running into less coarse oblique striæ on the sides; calcaria and spines of legs white; dorsal segments 1-4, rather finely and evenly

punctured, the fifth more strongly, the base of 3 and 4 transversely smooth; ventrals with a series of strong punctures before apical margins, from which pale hairs project, otherwise sparsely punctured; pygidial area longitudinally and evenly striated; pubescence of body pale, a rather prominent bunch on each side of the first dorsal segment; wings subfuscous, the anterior portion of the anteriors deeply clouded, nervures black. Length 15 mm.

Chapada (March). One specimen. Seems to be very distinct as regards coloration and sculpture of middle segment.

Myzine iridescens n. sp.

♀.—Black; abdomen iridescent, especially the first dorsal segment; inner orbits, metanotum, and a dot on each side of the first dorsal segment of abdomen, yellow; pubescence pale; clypeus with fairly strong punctures, except in the middle, which is longitudinally smooth and raised or carinated; front with large, deep punctures closer than in *radiata*; occiput with large, rather sparse punctures, its posterior margin with finer and closer ones; ocellar region almost impunctate; scape distinctly punctured; pronotum with large, though not deep, somewhat confluent punctures; dorsulum with the punctures on anterior portion fine and closer, on the remainder stronger and sparser than those of the pronotum; scutellum with large, separated punctures, upper surface of middle segment at base finely and closely punctured, apically rugose, particularly in the middle; posterior face covered with fairly strong, close striæ which radiate from the apex, become coarser laterally, and extend on sides where they are finer and evener; sides of prothorax finely striated obliquely; mesopleuræ with large, deep punctures; calcaria and spines of the legs white; the tibiæ and tarsi obscurely rufo-testaceous; abdomen above rather finely punctured, most strongly on segments 4 and 5, and at the sides, base of 2-4 transversely smooth; ventral segments with large, sparse punctures, a transverse series before the apical margins of segments 2-5; pygidial area longitudinally striated; wings subfuscous, the anterior portion of anteriors deeply clouded, nervures and tegulæ in part testaceous. Length 12 mm.

Chapada (December). One specimen. This is very similar superficially to *radiata*, but differs in much finer sculpture of thorax, particularly the middle segment.

Tiphia parallela Sm.

Chapada (December and January); Santarem (February); Villeta (May). Seven specimens.

Tiphia solitaria Sm.

Chapada (May and November); Santarem. Four specimens. Smith doubtfully referred *solitaria* to *parallela* as the latter's male, in which he was probably correct.

In addition to the two species of *Tiphia* above noted the collection contains, perhaps, five others, which I have not been able to place in consequence of the many incomplete descriptions that exist of neotropical forms. Smith's descriptions of *Tiphia* are almost useless.

Epomidiopteron Julii Rom.

Chapada (December and February); Santarem. Four specimens, all females.

Scolia (Discolia) nigrescens n. sp.

Deep black, shining; mandibles red; wings black, with a strong blue reflection; tibiae and tarsi reddish; base of second ventral segment with two small tubercles.

♀.—Head with deep, sparse punctures, closest at base of antennæ and on occiput; anterior margin of clypeus truncate; scape sparsely punctured; thorax coarsely punctured, tolerably closely so on prothorax and mesopleuræ, dorsulum and scutellum impunctate medially, upper segment of middle segment in middle strongly punctured, posteriorly depressed, and sparsely punctured; legs more or less reddish, their amount of black and red variable, the spines black, longer spur of hind tibiae equal to about one-third the length of the first hind tarsal joint; abdomen strongly punctured, particularly on the first and second dorsals, dorsals 3-5 almost impunctate except at base, where the punctures are close and small, dorsal segment six with cribose punctures and coarsely hirsute, ventrally the abdomen has large, sparse punctures, out of which project black hairs; pilosity of the body black and sparse; base of second ventral with two small, transverse tubercles. Length 22-24 mm.

♂.—Similar to ♀ in coloration except that the legs are usually entirely black; antennæ scarcely as long as head and thorax, stout; abdomen with all the segments punctured alike, the punctures being well separated, but not sparse; joints of medial and hind tarsi within, at apex, with a small bunch of grayish hairs. Length 16-20 mm.

Chapada (November, December and March). Fourteen specimens. Near *monticola* Cam., from Mexico, but is distinct in the tuberculate second ventral segment, the medially impunctate dorsulum and scutellum and differently colored legs.

Scolia (Discolia) versicolor Sauss.

Chapada (November and March.) Four ♀ and one ♂ specimen. Saussure in describing this species was in doubt whether its habitat was Brazil or Africa. The specimens before me agree very well with the description, and leave no doubt in my mind as to their identity. The color of thorax varies somewhat, the dorsulum, tegulæ and scutellum sometimes partaking of rufous.

The male has not before been recorded. It may be briefly diagnosed as follows:

♂.—Colored like the ♀, but with four apical segments reddish; antennæ stout, about as long as head and thorax; thorax strongly punctured, sparsely so on dorsulum, scutellum, metanotum and middle segment, medially; abdomen with strong punctures, fairly close, on dorsal segments 4–6 in the middle somewhat sparsely, the ventrals much more sparsely so; second ventral at base strongly bituberculate; longer spur of hind tibiæ about half as long as the first hind tarsal joint; wings black, with a strong bluish-purple reflection; pilosity of body black, rather sparse. Length 20 mm.

Scolia (Discolia) Drewseni Sauss.

Chapada (March and April). Eighteen ♀ and fifteen ♂ specimens. The wings have a bronzy-purple reflection, not violaceous as described by Saussure.

The ♂, heretofore unknown, may be described as follows:

♂.—Similar to ♀ as to coloration, the black or under side of thorax more distinct; antennæ about as long as head and thorax; thorax strongly punctured, sparsely so on the middle of dorsulum, scutellum, metanotum and upper surface of middle segment; abdomen with strong punctures becoming closer toward apex, sparsest on first and second dorsal and on the ventral segments; longer spur of hind tibiæ nearly half as long as the first hind tarsal joint; second ventral segment at base indistinctly tuberculate; wings black, with a strong bronzy-purple reflection; pilosity of body reddish, rather dense on apical abdominal segments. Length 12–18 mm.

Scolia (Discolia) decepta n. sp.

Similar to *Drewseni*, but the wings are deeper blue, and not purplish; clypeus transverse, not produced in the middle as in *Drewseni*.

♀.—Head with deep, sparse punctures, almost impunctate above on the front, more closely at base of antennæ and on occiput; clypeus convex and impunctate medially, depressed and punctured on the sides, a small patch of pale hairs on each extreme side; thorax

strongly punctured, very closely above on prothorax, elsewhere sparsely, the center of dorsulum, scutellum and metanotum impunctate or nearly so, the middle segment above in the middle with large, scattered punctures; longer spur of hind tibiæ less than half as long as the first hind tarsal joint; first and second dorsal segment strongly punctured, the punctures on second sparsest and feebler, dorsals 3-5 almost impunctate, the sixth with cribose punctures, ventrals with large, much scattered punctures, the base of second segment bituberculate; venation about as in *Drewseni*, the second transversocubital nervure strongly curved outwardly. Body rufous; flagellum except first joint, occiput narrowly, thorax on sides and beneath, the middle segment entirely, and first and base of second abdominal segments, black; legs, including spines, rufous; pilosity black, except fringe of mandibles and two apical abdominal segments. Length 21 mm.

Chapada. One specimen. Superficially, *decepta* shows a striking resemblance to *Drewseni*, from which it differs in the bluer wings, shape of clypeus and color of pilosity.

Scolia (*Discolia*) *bisignata* n. sp.

Similar to *Drewseni* and *decepta* in coloration, the third dorsal abdominal segment with a small lateral yellow spot; clypeus transverse anteriorly; wings black, with a strong purplish reflection.

♀.—Head with deep, sparse punctures, those of the occiput, base of antennæ and on sides of clypeus, much closer; clypeus strongly convex and impunctate medially, its fore margin transverse, at the sides with a small bunch or fringe of pale hairs; thorax strongly punctured, closest on prothorax and dorsulum anteriorly, posteriorly on dorsulum the punctures are large and sparse, as are likewise those of the scutellum and metanotum, on the centre of upper surface of middle segment the punctures are more evenly spaced; mesopleuræ posteriorly, metapleuræ and posterior face of middle segment smooth, impunctate, or nearly so; longer spur of hind tibiæ not one-third as long as the first hind tarsal joint; dorsal segments 1, 2 and base of third with strong, separated, though not sparse punctures, those at base of second and third segments finest and closest, apical portion of dorsals 3-5 with large sparse punctures, sixth dorsal cribose, ventrals very sparsely punctured, the punctures of the last segment finest, second ventral bituberculate at base. Body rufous; flagellum except basal joints, mandibles at tips, thorax on sides and beneath, and the dorsulum medially as a rule, and a narrow, somewhat

indistinct line at apex of dorsal segments 1-3, black; pilosity reddish and rather sparse, that on the occiput pertaining to yellow; none of the abdominal segments fringed; tegulæ strongly punctured on anterior half. Length 16-21 mm.

♂.—Head strongly and evenly punctured throughout the front, shallowly so on the occiput; antennæ scarcely as long as the head and thorax united, first and second joints of flagellum about equal in length, the terminal joint rounded at apex (the antennæ are decidedly stouter than in the male of *Drewseni*); thorax strongly punctured but rather more closely than in the female, and the posterior face of middle segment with large punctures; abdomen closely punctured particularly above, the last dorsal hardly cribose; second ventral bituberculate. A yellow spot in the emargination of the eyes, and the black on dorsulum and abdomen more generally distributed. Length 13-16 mm.

Chapada (January, March and April). Eleven female and six male specimens. The extent of black of abdomen and sides of thorax is subject to variation: in two females the dorsal segments are almost entirely black. The yellow spots on abdomen are constant in all specimens, and may be regarded as a good superficial character in distinguishing this species from *Drewseni* and allied species.

Elis vitripennis Sm.

Chapada (March). Four specimens.

Elis regina Sauss.

Chapada (January to April). Thirty-nine specimens, all females.

Elis nigra Sauss.

Chapada (October, February, March and April). Twenty-three female specimens.

Elis lucida Lep.

Two specimens from Chapada, collected in December and March respectively, I refer with some doubt to *E. lucida*. The larger specimen measures 27 mm. in length, whereas Saussure gives 38 mm. Should my specimens be correctly determined, there is no reason for considering this species as a variety of *costalis*, as suggested by Saussure and Sichel on p. 219 of their catalogue, as it is clearly distinct from that species.

Elis hyalina Lep.

Represented in the collection by numerous specimens of both sexes from Chapada (December, March and April). In addition to

the clear wings, the male of *hyalina* is distinguished from those of *costalis* and *Wesmaeli* by the unusually prominent and pointed tubercle at base of second ventral abdominal segment.

Elis costalis Lep.

Chapada (March and April); Rio de Janeiro (November). Fourteen females and numerous male specimens. The latter show considerable variation in size and maculation, the spotted form, however, is apparently rare. This form is the *E. fallax* Saussure, referred by that author as a variety of *E. hyalina*. It should be placed with *costalis*, however, in consequence of its heavy form and darker wings and also by the shape of the ventral tubercle of abdomen.

Elis Wesmaeli Lep.

Chapada (December, February, March and April). Numerous specimens of both sexes.

Elis cineraria Sichel.

A large series, over one hundred specimens, is in the collection from Chapada (November, March and April). The specimens agree with the description of *cineraria*, except that there is no yellow on the fourth dorsal or on any of the ventral abdominal segments. Only males are represented; and the series shows considerable variation in size, specimens measuring 16–30 mm.

Elis variegata Fabr.

Chapada (March). Fourteen male specimens. These only vary in that two specimens have the spots on the second dorsal segment united.

Elis conspicua Sm.

Four males. Santarem; Chapada (March). These vary in length from 12–20 mm.; and in the smaller specimens the pronotum is partly yellowish, and in one the third dorsal abdominal segment is bimaculated with that color.

Elis (Dielis) angulata n. sp.

Close to *conspicua*, but dorsal segments 1–4 fasciate with yellowish, thorax less shining, and pubescence of pronotum entirely pale yellowish.

♀.—Black, mandibles medially, tegulae and tibiae and tarsi more or less reddish-testaceous; transverse spot on metanotum and a band on dorsal segments 1–4, yellowish, the bands on first and fourth segments narrow, those on second and third greatly dilated medially

and emarginate anteriorly, at the sides narrowed; pubescence pale, that of the occiput and pronotum somewhat yellowish; apical margins of dorsal and ventral segments 2-5 distinctly fringed, the color of which fringe is white except on the dorsal segments medially and the fifth ventral (which have it golden-brown); the first dorsal is rather densely pubescent; clypeus punctured at the sides, bearing two longitudinally parallel carinæ down the middle; front strongly and closely punctured, the vertex and occiput, with exception of a few scattered punctures, impunctate; scape with scattered punctures; thorax subopaque, the dorsulum strongly punctured laterally and anteriorly, impunctate medially; scutellum and metanotum with scattered punctures; middle segment above with strong separated punctures, with a smooth, longitudinal, narrow space in the middle; posterior face concave, impunctate at extreme sides, the lateral margins somewhat sharply carinated; spines of the legs whitish-testaceous, calcaria darker; hind tibiæ beset with strong, black thorns externally, their longer spur more distinctly spatulate than in *conspicua*; wings subhyaline, subfuscous anteriorly and apically, with a purplish iridescence, nervures and stigma testaceous, apex of second submarginal cell very sharply angular in the middle; dorsal segments punctured toward the sides, rather opaque, ventrals shining, the second and third with two, and the fourth with one, transverse series of strong punctures; pygidium nude, sculptured in such a way as to appear shingled, its apical margin narrowly smooth and testaceous. Length 17 mm.

Santarem. One specimen. The strongly angulated apex of second submarginal cell and the maculation distinguish this species from *conspicua* and *auripilis*.

Elis (Dielis) auripilis n. sp.

Likely to be confused with *angulata*, but differs in its golden pubescence of front and dorsulum, the semi-yellowish wings and strongly punctured occiput.

♀.—Black; mandibles reddish; transverse spot on metanotum, and a fascia on dorsal abdominal segments 1-4, or 5, yellow, those on the second and third, or fourth broad, emarginate anteriorly and narrowly incised with black at the sides, else a small black spot is enclosed by the yellow on each side, on the first segment the fascia narrow and sometimes interrupted medially, on the fourth more or less variable, on the fifth narrow and inconstant; front, occiput, pronotum and dorsulum bearing golden pubescence, that of cheeks,

clypeus, thorax beneath and legs griseous; dorsal segments 2-5 with a fringe of golden-brown pubescence at apex, ventrals 2-5 with a white fringe; clypeus furrowed down the middle, bearing some coarse folds anteriorly; front strongly and closely punctured, the vertex with a few large, scattered punctures; occiput coarsely punctured and posteriorly, in addition, bearing coarse folds or rugosities; scape with scattered punctures; pronotum except posterior margin, strongly and closely punctured, bearing near each antero-lateral angle a deep, oblique depression; dorsulum with very large, rather regularly placed punctures, which are but little sparser medially; scutellum smooth medially, strongly punctured at each side, the metanotum impunctate; middle segment above somewhat prominent in the middle at apex, the median division with large punctures smooth at base, however, the lateral ones more finely punctured, posterior face concave, smooth, at the sides crenulated, not carinate; spines of medial and hind tibiae yellow, those of the tarsi and calcaria, whitish; wings fulvo-hyaline, iridescent, particularly on apical third, nervures and stigma fulvo-testaceous, apex of second submarginal cell angular medially, but not sharply, the second transverso-cubital vein being rather more sinuate than angulate; dorsal segments 1-4 sparsely punctured medially, rather strongly and closely at the sides, segment 5 strongly punctured throughout, ventrals shiny, segments 2-4 with two transverse series of punctures, segments 5 and 6 more generally punctured, sculpture of the pygidial area much as in *angulata*, but finer, and when held in certain lights the pygidium is clothed with a short appressed golden pubescence. Length 16-17 mm.

Three specimens. Chapada (March). This seems quite distinct from its allies in the color of the wings, which approaches that of Saussure and Sichel's "*stirps Elidis vespiformis*;" those species have the abdomen immaculate, however.

Elis (Dielis) Smithii n. sp.

In maculation, similar to *confluenta*, but the thorax immaculate; wings faintly yellowish along costa.

♀.—Black; mandibles in part reddish; narrow transverse spot on first and a large spot on each side of the second dorsal segments orange, the spots on second segment almost united internally, thereby having the appearance of a band which is strongly emarginate in the middle anteriorly; otherwise the abdomen black; insect with pale pubescence, that on the vertex and dorsulum fuscous; dorsal

segments 2-5 and fifth ventral with a fringe of black pubescence, ventrals 2-4 with a white fringe; clypeus furrowed down the middle, strongly punctured laterally and basally, in the middle and anteriorly smooth; front strongly and closely punctured, the punctures of vertex large and scattered; occiput with strong separated punctures, but not rugose; scape with scattered punctures; pronotum except posterior margin strongly and closely punctured, and with a depression on each side as in *auripilis*, but less strong; punctures of dorsulum coarse, close anteriorly, sparser at the sides, and in the middle absent; scutellum and metanotum strongly punctured except the apical portion which is smooth; middle segment with the median division strongly punctured laterally, smooth medially and a little produced at apex, on each side of this median division the middle segment is more finely and evenly punctured, the posterior surface of the median division only smooth and shining, sides of posterior surface crenulated; spines of the tibiae and the middle tarsi black, calcaria and spines of hind tarsi whitish; wings subhyaline iridescent, faintly yellowish along the costa, costal vein black, the others testaceous, apex of second submarginal cell angulate in the middle; dorsal segments 1-3 with sparse, rather indistinct punctures, those on the following segments closer and more distinct, especially on segment 4, ventrals shining, segments 2 and 3 with two, 4 and 5 with one, series of transverse punctures, sixth sparsely punctured; pygidial area coarsely longitudinally striate, not pubescent. Length 17 mm.

One specimen. Corumbá (April). Distinguished from *conspicua* which it resembles, by the immaculate thorax, distinctly punctured occiput, etc.

Elis dorsata Fabr.

Rio de Janeiro (November); Chapada (January, March and April); Santarem (February); Corumbá (April). Nineteen specimens, all females.

Elis mutanda S. & S.

Santarem. One ♀ specimen. I refer this specimen here with hesitation. It measures but 17 mm., and the wings are bluish-purple; the second and third dorsals have a small, somewhat rounded, yellow spot on each side.

Elis (*Dielis*) *aureohirta* n. sp.

Belongs evidently to Saussure and Sichel's "*Stirps Elidis vespiformis*," and differs from other species of that group (*vespiformis*,

brasiliana and *Gerstaeckeri*) by the dense fulvous pubescence with which the pronotum and dorsulum are clothed.

♀.—Black; mandibles reddish in part; head in front, occiput and thorax above with long golden yellow pubescence, particularly dense on the pronotum and anterior portion of dorsulum, the latter in the middle nude, as well as middle of scutellum, metanotum and upper surface of middle segment; thorax beneath, legs, first dorsal and the ventrals more or less with long griseous pubescence, dorsals 1-3 with sparse pale pubescence longest at sides, the fourth, fifth and sixth with black pubescence, dorsals 1-3 and ventrals 2-5 fringed with white pubescence at apex; clypeus strongly punctured basally, smooth medially, and bearing folds or rugæ on apical portion; front strongly punctured, transverse smooth space before the ocelli; vertex with larger scattered punctures, which become closer on the occiput; scape with a few scattered punctures; dorsulum strongly punctured laterally and anteriorly, perfectly smooth and polished medially; scutellum, metanotum and median divisions of middle segment with large separated punctures at the sides, impunctate medially; outer lobes or divisions of middle segment with finer, shallower punctures, their punctures stronger in the middle of their upper surfaces, the sides of which are sharply carinated, the carinæ not extending on the posterior surface; spines of the legs and the calcaria black; wings fulvous, slightly bluish on apical portion, the second transverso cubital nervure sinuated, pertaining to angular in some specimens; abdomen above with sparse, shallow punctures, strongest toward the sides and on the first, fourth and fifth segments, base of second, and sides of third, fourth and fifth ventrals with strong punctures, the lateral punctures of third segment, however, not reaching its base, the second and third with two, the fourth and fifth with one, series of transverse punctures, sixth with finer, scattered punctures; pygidial area longitudinally and irregularly rugose. Length 16-17 mm.

♂.—Colored like the female, but the abdomen bluish, the pubescence of the body denser throughout, is finer, less yellow on the thorax and is very dense in the middle segment; form slender, similar to *E. plumipes* ♂; antennæ fully as long as head, thorax and first segment of abdomen united, the first joint of flagellum distinctly shorter than the second; thorax on sides and beneath clothed with a silky pile in addition to the long pubescence; dorsulum and middle segment on upper and posterior surfaces punctured throughout; legs

slender, the spines of hind and medial tarsi pale; dorsal segments 1-4 with shallow, separated punctures, those of fifth, sixth and base of seventh closer and deeper, the ventrals sparsely punctured; second ventral at base not at all tuberculate. Length 15-17 mm.

Chapada (March). Over one hundred specimens. Differs from its allies including *E. albofimbriata* Smith, by the color of the thoracic pubescence.

***Elis plumipes* Dr.**

Chapada (November and March). Eight female specimens. I am uncertain whether a large series of male specimens contained in the collection from Chapada (March and October), Corumbá (April) and Santarem (November) belong to this species or to *E. dorsata*.